ſhortly, as I am informed, to renew their ſearch in and near the place, where theſe inſcriptions were found; it is to be hoped, that ſome further light may by that means be gained, for the clearing up theſe difficulties.

XXXII. *Some Obſervations upon an* American *Waſps-Neſt, ſhewn to the* Royal Society: *By Mr.* Iſrael Mauduit, *F.R.S.*

Read May 15, 1755. MR. de Reaumur diſtinguiſhes waſps into three claſſes, from the different ſituations, in which they place their neſts; ſome making choice of unfrequented parts of houſes, ſome of little cavities in the earth, and others of the branches of trees for that purpoſe. The firſt of theſe is the largeſt ſort, or hornet; the ſecond is the common ſort here in England; and the laſt is more frequent in America.

The neſt, which I now do myſelf the honour to communicate to this Society, was ſent me from Maryland; where they are found on the lower kinds of trees, in the thickeſt parts of their woods. This is built upon a dogwood-tree, or the Cornus mas Virginiana; and hangs quite detached from the reſt of the tree by an extreme branch, of little more than an inch circumference: which, with its ſmaller diviſions running through the ſubſtance of the neſt, anſwer the purpoſe of pillars, to unite and ſupport the ſeveral floors of the building.

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The figure is a conoid, or an acuminated oval: its longer diameter is twenty inches, the ſhorter near the baſe is twelve.

It is perforated on two oppoſite ſides, for the inhabitants to enter and go out at: the upper door was originally leſs, but is inlarged, to give a more eaſy view of the ſtructure of the cells within.

The ſhell is compoſed of paper; the ſheets of which at its upper end are larger and more diſtinct. They are of an aſh-colour, of different ſhades, and ſtreak'd or marbled: and, being lightly laid upon each other, form a wall of from one and an half to four inches thickneſs in the ſeveral parts of it.

The lax hollow manner, in which they are joined to each other, renders them a more effectual ſecurity from rain; as they attract water in common with all other ſubſtances, made of the ſame materials; and would have been more eaſily ſoaked thro', if they had been cloſer compreſſed together. For the ſame reaſon the apex of the cone is of the greateſt thickneſs; and the baſe is of a ſtiffer and more celluloſe texture.

Our paper is formed of broken vegetable fibres, placed together without any order, juſt as the water leaves them upon the ſieve. *This*, to the naked eye, yeilds the appearance of a more regular arrangement of its parts; being wholly compoſed of parallel ſtriæ, placed at about a line's diſtance from each other; with fibres going off from them, in a manner imperfectly reſembling the ribs and plumes of a feather. The microſcope ſhews very little of this regular arrangement; except that the ribs conſiſt of a thicker and cloſer texture; being the joinings of the ſeveral

ſeveral breadths, in which the animal works it. In all other reſpects it appears to be a plexus of fibres, very rudely platted together, and no way ſuperior to the meaneſt ſort of whited-brown paper, with which I have compared it.

In reſpect of ſtrength it is much inferior to it; having nothing of that toughneſs, requiſite to every other uſe of paper, except that one, for which this is intended.

Upon this ſingle account the more rigid nature of its woody fibres is an advantage to it; as it is leſs bibulous than the common blotting paper, retains its ſtiffneſs better when it is wetted, and does not collapſe ſo ſoon.

The colour is the ſame with that of oak-wood, and the common ſorts of timber, after it has been for three or four years expoſed in the air; and appears in the microſcope to be intirely owing to extraneous matter adhering to it: for the fibres themſelves are of a clear white, little differing from thoſe of white paper, with this ſordes ſcattered over them.

It burns like paper, but with a weaker and quicker flame, as if a great part of its oil had been before exhauſted: and its ſmell in burning diſcovers nothing of the pungency of volatile ſalts, but proves it to be a purely vegetable ſubſtance.

Each of theſe obſervations confirms Mr. de Reaumur's account of its formation; it being compoſed of the fibres of wood, that is in its firſt ſtage of decay; when, by having been long expoſed in the air to the action of the ſun and rain, its external parts begin to ſeparate, and give theſe animals an opportunity to tear off certain ſmaller filaments, which

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are then looſened; and which they collect together into a little ball; and, having moiſtened it to a kind of paſte, ſpread it out with their talons and fore-feet, into its preſent form.

Hence the marbling of this paper is the neceſſary reſult of the method of its conſtruction: for as each ſheet conſiſts of a number of faſciæ or breadths, equal to the reach of the animal, that ſpreads them; each of theſe faſciæ will be of a different ſhade, according to the ſeveral colours of the little bundles of fibres, collected by ſo many labourers from different materials.

Upon the whole, the ſubſtance before us is a true paper; but, by the exact œconomy of nature, wrought to that degree of perfection only, which was neceſſary to ſerve the ſingle purpoſe it was intended for. Being examined by the microſcope, it appears to be of a coarſer grain, a ſhorter ſtaple, and of a much looſer texture; and is a rare, though not a ſingular inſtance, of a natural production falling far ſhort of the artificial one of the ſame kind.

The inſide ſtructure of theſe neſts is ſo well deſcribed by Mr. de Reaumur, that we cannot hope to diſcover any thing new in the opening it.